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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,399	10/20/2003	Ethan Williford	2269-5864US (02-1549.00/U)	2370
24247	7590	12/20/2005	EXAMINER LOUIE, WAI SING	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			ART UNIT 2814	PAPER NUMBER

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/690,399	<b>Applicant(s)</b> WILLIFORD, ETHAN	
	<b>Examiner</b> Wai-Sing Louie	<b>Art Unit</b> 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 10-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lilja et al. (US 5,286,981), newly cited.

With regard to claims 1-2 and 5, Lilja et al. disclose a power semiconductor device M<sub>1</sub> (col. 5, line 9 to col. 10, line 23 and fig. 1), comprising:

- Spaced-apart source and drain regions 2 formed in the substrate 1 (fig. 1);
- A channel region 7 defined between the source and drain regions 2 (fig. 1);
- A layer of gate oxide 3 formed over at least part of the channel region 7 (col. 5, line 53);
- A gate G<sub>1</sub> formed over the gate oxide 3, the gate further having at least one implant aperture formed there (col. 9, lines 17-42 and fig. 4), the channel region between the source and drain regions 2 of the substrate 1 further including a channel internal implanted region 7 between the source and drain regions (fig. 1), the source and drain regions 2 each including lightly doped extensions 6 under the gate G<sub>1</sub>, but Lilja et al. do not disclose the lightly doped extensions 6 and the channel internal implanted region 7 being substantially equivalently doped.

However, since the applicant has not established the criticality of the doping concentration stated and since these concentrations are in common use in similar devices in the art, it would have been obvious to one of ordinary skill in the art to use these values in the device. Where patentability is said to be based upon particular chosen dimension or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

With regard to claims 3 and 6, although, Lilja et al. do not specifically state that the channel internal implanted region and the lightly doped structure comprise double-diffusion structure. However, since Lilja et al. disclose both structures are formed by double-implantation IM2 and IM3 (col. 9, lines 17-32 and fig. 4c to 4d), it is clear that such a structure results in double-diffusion into the channel area and is thus an obvious feature of the claimed semiconductor device.

With regard to claim 7, Lilja et al. disclose the at least one lightly doped structure is a light-doped drain structure arranged between one of the drain and source regions 2 and the channel region 7 (fig. 1).

With regard to claims 8-9, Lilja et al. disclose the at least one implant aperture comprises a plurality of implant apertures arranged in a two dimensional array in a checkerboard configuration along the gate (fig. 2c).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lilja et al. (US 5,286,981) in view of Lai et al. (US 6,649,461).

With regard to claim 4, Lilja et al. do not disclose the double-diffused structure 7 is implanted at a diagonal angle to the gate through the implant aperture. However, Lai et al. disclose an angle implant (Lai col. 8, lines 28-36 and fig. 4). Lai et al. teach the angle implant would reduce or eliminate the effects of narrow channel impurity diffusion to surrounding region of insulation (Lai col. 5, lines 48-51), which could cause the hot-carrier effect of the transistor (Lai col. 4, lines 20-35). Yilmaz et al. and Lai et al. have substantially the same environment of transistor having an oxide layer under the gate. Therefore, it would have been obvious for the one with ordinary skill in the art to modify Lilja's device with the teaching of Lai et al. to provide the angle implant through the gate implant aperture in order to avoid damaging the gate insulation.

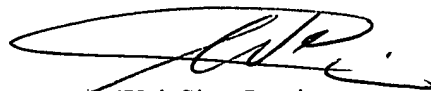
### *Response to Arguments*

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection in view of newly cited reference.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Wai-Sing Louie', is positioned above the printed name and title.

Wai-Sing Louie  
Patent Examiner

Wsl  
December 13, 2005.